

## New Species of *Baetodes* from Mexico and Central America

(Ephemeroptera: Baetidae)

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The genus *Baetodes*, described by Needham and Murphy (1924), was based upon nymphs of two species collected in Brazil. *Baetodes serratus* was described, named, and designated as the genotype, and the other was described and reported as *Baetodes* Nymph No. 1. Traver (1943) reported the adult stage of the genus when she described *B. spiniferum* from a male imago and a female subimago collected in Venezuela. In this same paper, she reported an undescribed species of *Baetodes* from Mexico, and in 1944, published additional records of *B. serratus* from Brazil. Edmunds (1950) reported a nymphal record of the genus from Texas, and a second Mexican record from Culinevera (Cuernavaca?), south of Mexico City. Demoulin (1955) described *B. itatiyanus* from nymphs collected in Brazil, and Packer (1966) was the first to report the genus from Central America when he published records from twelve localities in Honduras. Mayo, in 1968, described two additional species, *B. levis* and *B. spinae*, from nymphs collected in Ecuador.

This report includes descriptions and names for nymphs of nine species of *Baetodes* collected in Mexico, Guatemala, El Salvador, and Honduras, and the number of named species now stands at fourteen. The characters most useful in distinguishing the species of *Baetodes* in the nymphal stage are: (1) the presence or absence, the number, and the degree of development of the median tubercles on the pronotum, metanotum, and abdominal terga; (2) the presence or absence of coxal gills; (3) the color on the abdominal gills; and (4) the color on the thoracic and abdominal segments. Coxal gills are of limited taxonomic value. In some species, they are always present, in others they are always absent, but in others they may be present or absent.

### ***Baetodes adustus* Cohen and Allen, new species**

**NYPH.**—Length: body 5.0–6.0 mm; caudal filaments 6.0–7.0 mm. General color brown with darker brown, red, reddish brown and pale markings. Head brown with darker brown markings; occiput with sparse setae. Thoracic nota brown with darker brown markings; pronotum with a dorsal, median, posterior elevation; metanotum with moderately developed dorsal, median, posterior tubercle

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(Fig. 1); thoracic nota with sparse setae; thoracic sterna pinkish red; legs brown with pale markings; femora brown with variable pale markings; tibiae brown with thin, pale longitudinal streak; tarsi brown with pale markings and brown at apices; coxae with finger-like gills; tarsal claws with 7 denticles. Abdominal terga usually brown to reddish brown, color often darker along anterior margin of segments; abdominal terga 1-8 with median tubercle; tubercles moderately developed on terga 1-7, small on tergum 8 (Fig. 1); abdominal terga with sparse setae; abdominal gills pale, often tinged with pinkish red; abdominal sterna brown with reddish brown and pale markings; abdominal sterna 1-6 brown, suffused with red and with reddish brown lateral markings; sterna 7-10 brown with pale median macula, and reddish brown lateral markings. Caudal filaments light brown.

*Holotype*, mature female nymph, STREAM 5 MI. S. CIUDAD MENDOZA, VERA CRUZ, MEXICO, 7 November 1968, R. K. Allen. Paratopotypes: 2 male and 3 female nymphs, same data as holotype, 1 male and 1 female in collection University of Utah, Salt Lake City, others in collection California State College at Los Angeles. Paratype: 1 female nymph, Rio Jamapa, 32 mi. N. E. Coscamatipac, Vera Cruz, Mexico, 14 July 1966, R. K. Allen, in collection California State College at Los Angeles.

REMARKS.—*Baetodes adustus* is superficially similar to *B. pallidus* n. sp. from Mexico and Honduras. Both species bear median abdominal tubercles on segments 1-8, a moderately developed metathoracic tubercle and only a small elevation on the posterior margin of the pronotum, and the coxae with finger-like gills. Mature nymphs of *B. adustus* are longer than those of *B. pallidus*, and the abdominal terga are brown to reddish brown and without pale markings (Fig. 1).

### ***Baetodes caritus* Cohen and Allen, new species**

NYMPH.—Length: body 3.0-4.0 mm; caudal filaments 4.0-5.0 mm. General color brown with dark brown, reddish, and pale markings. Head brown, sutures pale and pale around compound eyes; occiput with sparse setae. Thoracic nota brown; pronotum without dorsal, median, posterior elevation; metanotum with barely discernible dorsal, median, posterior elevation; thoracic nota with sparse setae; thoracic sterna reddish with numerous pale dots; legs brown with pale markings; femora brown with pale median and basal maculae (Fig. 2); tibiae light brown to brown; tarsi pale, brown at apices; coxae with small finger-like gill; tarsal claws with 8 denticles. Abdominal terga brown with dark brown and reddish brown markings; abdominal terga 1-3 usually brown; terga 4-9 often brown with dark brown anterior margins; terga 6-9 usually brown with pale median longitudinal stripe; tergum 10 light brown; terga 1-3 each with barely discernible, median elevation; abdominal terga with sparse setae; abdominal gills pale; abdominal sterna pale to light brown with reddish brown lateral markings; sternum 1 reddish with paired large submedian white dots; sterna

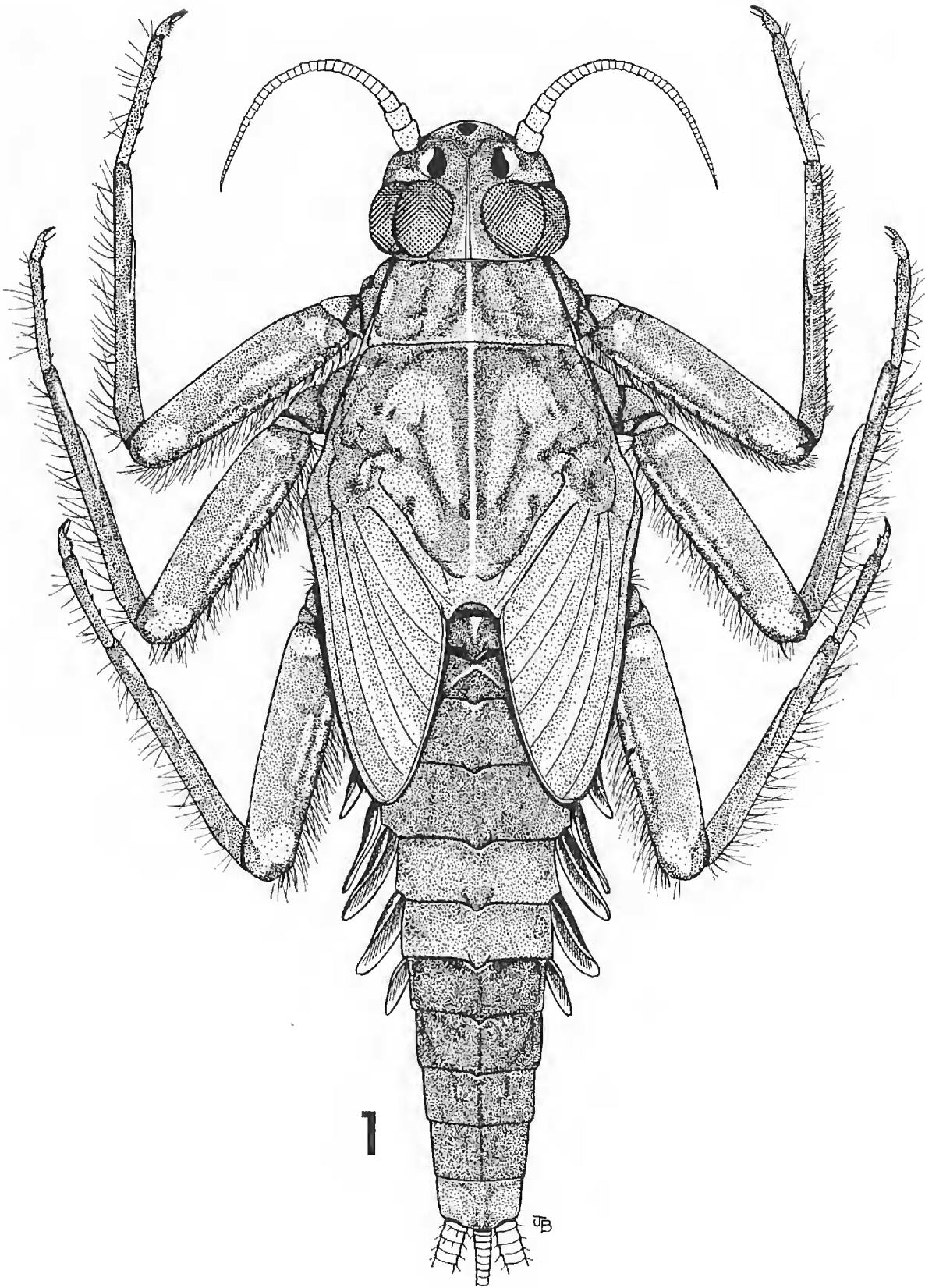


FIG. 1. *Baetodes adustus*, mature male nymph, dorsal view

2-6 pale to light brown with lateral reddish brown markings, with white dots; sterna 7-10 light brown (Fig. 6). Caudal filaments light brown.

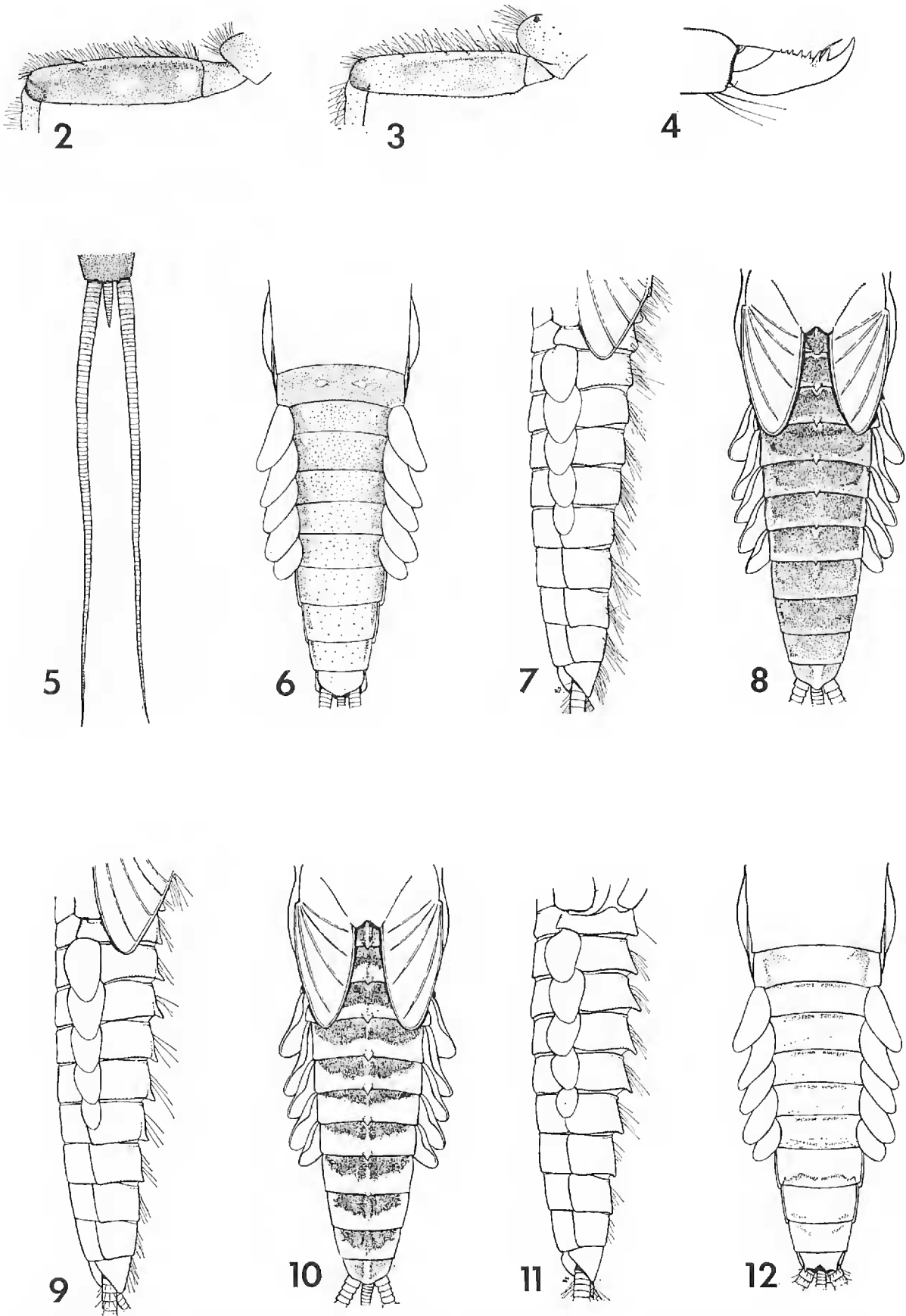
*Holotype*, mature female nymph, RIO LATOMA AT KM 181 ON HWY. 2, GUATEMALA, 24 October 1968, R. K. Allen. Paratopotype: 1 male

nymph, same data as holotype, in collection California State College at Los Angeles. Paratypes: 1 female nymph, Rio Hondura at Ciudad Carrita, 5 mi. E. El Salvador/Honduras border, Honduras, 28 October 1968, R. K. Allen; 1 female nymph, Rio Mizata, 27 mi. W. La Libertad, El Salvador, 28 October 1968, R. K. Allen; 1 female nymph, Rio Sesecapa near Mapastepec on Hwy. 200, Chiapas, Mexico, 20 July 1966, R. K. Allen; 1 female nymph, Stream 7 mi. N. Arriago, on Hwy. 190, Chiapas, Mexico, 20 July 1966, R. K. Allen; 1 female nymph, Rio Papagayo on Hwy. 95, Guerrero, Mexico, 16 November 1968, R. K. Allen; 1 male nymph, Rio Amacuzac at Huajintlan on Hwy. 95, Morelos, Mexico, 14 November 1968, R. K. Allen; 3 female nymphs, Rio San Antenco at Tonalá, Chiapas, Mexico, 1 November 1968, R. K. Allen; 2 male and 1 female nymph, Rio Piedras Negras at Piedras Negras near Poza Rica, Vera Cruz, Mexico, 12 November 1968, R. K. Allen; 1 female nymph, Rio Hondura at Ciudad Carrita, ca. 5 mi. E. El Salvador, 28 October 1968, R. K. Allen; above paratypes in collection California State College at Los Angeles; 1 female nymph, Escuela Agricola Panamericana, Dept. El Paraiso, Honduras, 26 October 1964, J. S. Packer; 1 male and 1 female nymph, Stream 8 km. E. Danli, El Paraiso, Honduras, 29 August 1964, J. S. Packer; above paratypes in collection University of Utah, Salt Lake City.

REMARKS.—*Baetodes caritus* appears to be most closely related to *B. deficiens* n. sp. Both species have reduced median abdominal tubercles, and similar dorsal abdominal color patterns. *Baetodes caritus* is distinguished from the latter species by the following characters: (1) femora brown with pale maculae (Fig. 2) and (2) thoracic sterna reddish with numerous pale spots (Fig. 6).

### ***Baetodes deficiens* Cohen and Allen, new species**

NYMPH.—Length: body 3.5–4.5 mm; caudal filaments 5.0–6.0 mm. General color light brown to pale with dark brown markings. Head light brown, darker brown around median ocellus; occiput with sparse setae. Thoracic nota light brown with brown markings; mesonotum usually with brown transverse marking across anterior margin; pronotum without median posterior elevation or tubercle; metanotal tubercle barely discernible; thoracic nota with sparse setae; thoracic sterna pale; legs pale with brown markings; coxae usually with gills; femora pale with brown basal, median, and usually subapical maculae, and with dark brown to black marking at each apex (Fig. 3); tibiae and tarsi pale; tarsal claws with 7 denticles. Abdominal terga brown with dark brown, reddish brown, and pale markings; abdominal terga 1–3 reddish brown with pale to light brown posterior margins; terga 4–6 with dark brown to reddish brown markings at anterior margin; terga 7–9 brown, usually with dark brown anterior spots; tergum 10 pale; terga 1–3 each with barely discernible



FIGS. 2-3. Left femora of *Baetodes* nymphs. FIG. 2. *B. caritus*. FIG. 3. *B. deficiens*. FIG. 4, *Baetodes adustus*, tarsal claw. FIG. 5, *Baetodes adustus*, nymphal caudal filaments. FIGS. 6-12. Abdomens of *Baetodes* nymphs. FIG. 6. *B. caritus*, ventral view. FIG. 7. *B. deficiens*, lateral view. FIG. 8. *B. fuscipes*, dorsal view. FIG. 9. *B. fuscipes*, lateral view. FIG. 10. *B. inermis*, dorsal view. FIG. 11. *B. inermis*, lateral view. FIG. 12. *B. inermis*, ventral view.

median elevation (Fig. 7); terga with long setae; abdominal gills pale; abdominal sterna pale with brown markings; sterna 1-7 usually with submedian anterior transverse streaks; sterna 6-9 with sublateral longitudinal streaks; sternum 10 pale. Caudal filaments pale.

*Holotype*, mature female nymph, RIO CLARRITA AT SAN MORANO ON HWY. 4, DEPT. EL PARAISO, HONDURAS, 29 October 1968, R. K. Allen. Paratypes: 1 male and 4 female nymph, Rio Amacuzac at Huajintlan on Hwy. 95, Morelos, Mexico, 14 November 1968, R. K. Allen; 1 male and 2 female nymphs, Rio Choluteca, Tegucigalpa, Honduras, 29 October 1968, R. K. Allen; 1 female nymph, Rio San Marcos at Apanantilla 3 mi. S. E. Villa A. Camacho, Vera Cruz, Mexico, 12 November 1968, R. K. Allen; 2 male and 3 female nymphs, Rio Piedras Negras at Piedras Negras near Poza Rica, Vera Cruz, Mexico, 12 November 1968, R. K. Allen; 2 male and 1 female nymphs, Rio Papagpyo near Tierra Colorado, Guerrero, Mexico, 16 November 1968, R. K. Allen; 1 male and 1 female nymph, Stream 9 mi. S. Rio Grande de Santiago, Jalisco, Mexico, 17 October 1968, R. K. Allen; above paratypes in collection California State College at Los Angeles; 7 female nymphs, Dept. El Paraiso, Escuela Agricola Panamericana, Rio Yeguace, Honduras, 26 October 1964, J. S. Packer; 1 female nymph, Dept. Choluteca, Stream near Choluteca on Pan Americana Hwy., Honduras, 10 October 1964, J. S. Packer, above paratypes in collection University of Utah, Salt Lake City.

REMARKS.—*Baetodes deficiens* is distinguished from *B. caritus*, an apparently closely related species, and all other described species of *Baetodes* by the following combination of characters: (1) abdominal terga without obvious tubercles, and with only raised elevations of segments 1-3; (2) femora pale with brown maculae (Fig. 3); and (3) thoracic sterna pale.

### ***Baetodes fuscipes* Cohen and Allen, new species**

NYMPH.—Length: body 3.0-4.0 mm; caudal filaments 3.0-4.0 mm. General color brown and reddish brown with pale and reddish markings. Head brown with irregular dark brown markings; occiput with sparse setae. Thoracic nota brown with dark brown markings; pronotum with moderately well-developed median posterior elevation; metanotum with moderately developed median tubercle; thoracic nota with sparse setae; thoracic sterna reddish with numerous pale spots; coxae without gills; legs brown with pale and dark brown markings; femora brown with pale L-shaped marking, and dark brown at apices; tarsal claws with 7 denticles. Abdominal terga reddish brown with pale margins; terga 1-3 dark brown; terga 4-8 brown; terga 9-10 light brown (Fig. 8); terga 1-7 with median tubercles; terga 1-6 with moderately developed tubercles; terga 7 with poorly developed tubercles (Fig. 9); terga with sparse setae;

abdominal gills pale; abdominal sterna reddish with brown to pale markings and pale spots; sterna 1-4 reddish with numerous pale spots; sterna 5-9 reddish, brown to pale medially; sternum 10 pale. Caudal filaments light brown.

*Holotype*, male nymph, STREAM 5 MI. S. CIUDAD MENDOZA, VERA CRUZ, MEXICO, 7 November 1968, R. K. Allen. Paratypes: 2 female nymphs, Rio Jamapa 3 mi. N. E. Coscomatipéc, Vera Cruz, Mexico, 8 November 1968, R. K. Allen, in collection California State College at Los Angeles; 1 female nymph, 10 mi. W. Juticalpa, Rio Juticalpa, Dept. Olancho, Honduras, 6 November 1964, J. S. Packer, in collection University of Utah, Salt Lake City.

REMARKS.—The nymph of *B. fuscipes* is similar to *B. adustus* and *B. pallidus* n. sp. in the number and development of the median, dorsal, abdominal tubercles, and in the development of the metanotal tubercle. The former species differs as the posterior pronotal tubercle is well developed and the coxae are without gills. This species is further distinguished by the color characters of the abdominal terga.

### **Baetodes inermis** Cohen and Allen, new species

NYMPH.—Length 4.0-5.0 mm; caudal filaments 5.5-6.5 mm. General color light brown to brown with darker brown and reddish brown markings. Head light brown to brown with darker brown markings; head often with dark brown band between ocelli; occiput with sparse setae. Thoracic nota brown with dark brown markings; pronotum without posterior median elevation; metanotum with poorly developed median tubercle; thoracic nota with sparse setae; thoracic sterna pale usually with dark circular lines around bases of legs; legs pale with brown markings; femora pale with brown markings; tibiae and tarsi pale, often brown at apices; coxae with or without gills; tarsal claws with 7 denticles. Abdominal terga pale to brown with dark brown and reddish brown markings; terga 1-6 usually pale with brown to reddish brown anterior markings triangular in shape on posterior segments; terga 7-9 brown with dark brown anterior markings; terga 5-9 often with disjunct transverse reddish brown triangular marking; tergum 10 brown (Fig. 10); terga 1-7 with poorly developed median tubercle; tubercles of segments 1-6 small, tubercles barely discernible on segment 7 (Fig. 11); terga with sparse setae; abdominal gills pale; abdominal sterna pale with reddish brown markings; sterna 1-7 usually with thin transverse anterior reddish brown marking; sternum 8 often with faint transverse marking; sterna 9-10 usually pale (Fig. 12). Caudal filaments pale.

*Holotype*, mature female nymph, RIO SAN MARCOS NEAR CIUDAD VICTORIA, TAMAULIPAS, MEXICO, 24-25 November 1968, R. K. Allen. Paratopotypes: 12 male and 45 female nymphs, same data as holotype, 1 male and 3 female nymphs in collection of University of Utah, Salt Lake City; California Academy of Sciences; and Canadian National Collection, Ottawa; remainder in collection of California State College at Los Angeles. Paratypes: 20 male and 32 female nymphs, Rio

Amacuzac at Huajintlan on Hwy. 95, Morelos, Mexico, 14 November 1968, R. K. Allen; 1 female nymph Stream 15 mi. N. Ayoquezco, Oaxaca, Mexico, 20 October 1968, R. K. Allen; 1 male nymph, Rio Grande 3 mi. S. Gualatao, Oaxaca, Mexico, 6 November 1968, R. K. Allen; 14 male and 16 female nymphs, Rio La Pasion at Tizapan El Alto, Jalisco, Mexico, 16 October 1968, R. K. Allen; 1 female nymph, Rio Atoyac at Ayoquezco, Oaxaca, Mexico, 22 October 1968, R. K. Allen; 1 female nymph, stream at Hacienda Guadalupe, Jalisco, Mexico, 17 October 1968, R. K. Allen; 1 female nymph, Rio Papagayo on Hwy. 95, Guerrero, Mexico, 16 November 1968, R. K. Allen, above paratypes in collection California State College at Los Angeles.

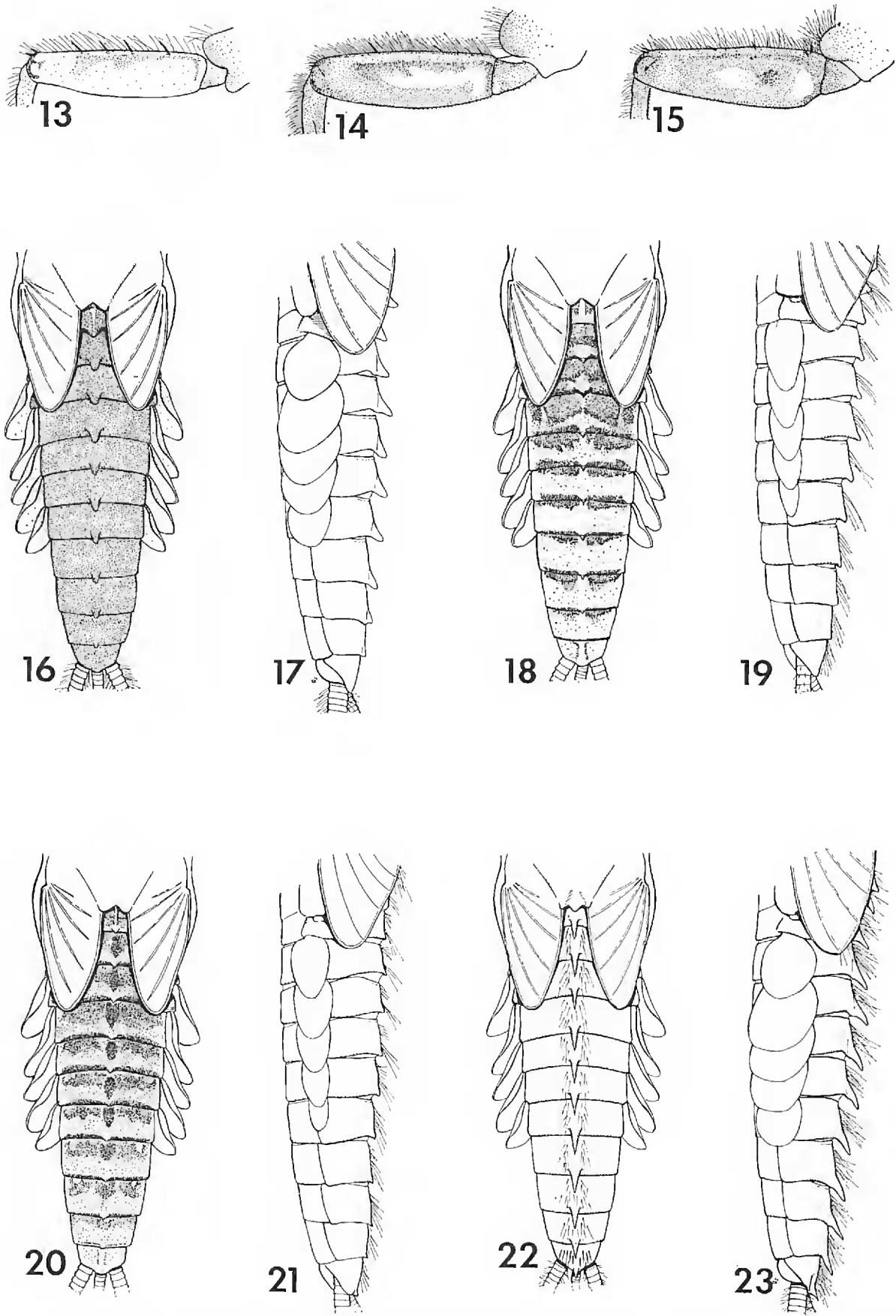
REMARKS.—*Baetodes inermis* is readily distinguished from all described species of the genus by the distinctive color pattern on the abdominal terga, and by the thin transverse lines across the anterior margin of the abdominal sterna.

### ***Baetodes noventus* Cohen and Allen, new species**

NYMPH.—Length: body 3.5–4.5 mm; (caudal filaments broken). General color brown to reddish brown with dark brown and reddish markings. Head unicolorous brown; occiput without setae. Thoracic nota brown with dark brown markings; pronotum with well developed dorsal, median tubercle; metanotum with a well developed dorsal median tubercle (Fig. 17); thoracic nota without setae; thoracic sterna light brown, suffused with red; legs light brown with pale and dark brown markings; femora brown with pale basal and apical maculae, and dorsal margin and apices dark brown; tibiae and tarsi light brown, apices of tarsi brown; coxae with finger-like gills; tarsal claws with 6 denticles. Abdominal terga brown to reddish brown, middle segments often pale with brown markings; abdominal terga 1–9 with median tubercle; terga 1–7 with well developed tubercles, tubercles moderately developed on terga 8–9 (Fig. 16–17); abdominal terga without setae; abdominal gills pale, often suffused with red; abdominal sterna pale, suffused with red and with brown markings; sterna 1–5 pale, suffused with red; sterna 6–9 pale with sublateral brown markings; sternum 10 pale. (Caudal filaments broken).

*Holotype*, mature female nymph, RIO MIZATA, 27 MI. W. LA LIBERTAD, EL SALVADOR, 28 October 1968, R. K. Allen. Paratypes: 1 female nymph, Rio Clarrita at San Morano on Hwy. 4, Dept. El Paraiso, Honduras, 29 October 1968, R. K. Allen; 1 female nymph, Rio Latoma at km. 182 on Hwy. 2, Guatemala, 24 October 1968, R. K. Allen, above paratypes in collection California State College at Los Angeles; 1 female nymph, Campamento Galera at bridge on Hwy. 3, Dept. Olancho, Honduras, 7 November 1964, J. S. Packer; 1 male and 1 female nymph, 38 km E. Zamorana on Hwy. 4, Dept. El Paraiso, Honduras, 31 October 1964, J. S. Packer; 1 male nymph, Stream





FIGS. 13-15. Left femora of *Baetodes* nymphs. FIG. 13. *B. pallidus*. FIG. 14. *B. pictus*. FIG. 15. *B. tritus*. FIGS. 16-23. Abdomens of *Baetodes* nymphs. FIG. 16. *B. noventus*, dorsal view. FIG. 17. *B. noventus*, lateral view. FIG. 18. *B. pallidus*, dorsal view. FIG. 19. *B. pallidus*, lateral view. FIG. 20. *B. pictus*, dorsal view. FIG. 21. *B. pictus*, lateral view. FIG. 22. *B. tritus*, dorsal view. FIG. 23. *B. tritus*, lateral view.

E. Guaimaca on Hwy. 3, Dept. Francisco Morazan, Honduras, 6 November 1964, J. S. Packer, above paratypes in collection University of Utah, Salt Lake City.

REMARKS.—The nymph of *Baetodes noventus* is distinguished from all described species of *Baetodes* by the following combination of characters; (1) abdominal terga with median tubercles on segments 1–9; (2) well developed median, dorsal, tubercles on the pronotum, metanotum, and abdominal segments 1–7; and (3) coxae with gills.

### ***Baetodes pallidus* Cohen and Allen, new species**

NYMPH.—Length: body 3.5–4.5 mm; (caudal filaments broken). General color light brown and reddish brown and black markings. Head light brown with pale transverse band between compound eyes and reddish brown transverse band between lateral ocelli; occiput with sparse setae. Thoracic nota light brown with brown markings; pronotum with small dorsal, median elevation; mesonotum with reddish brown transverse marking across anterior margin; metanotum with moderately developed dorsal, median tubercle; thoracic nota with setae; thoracic sterna pale; legs light brown with pale and brown markings; femora light brown with pale basal macula, elongate median macula, and apical dark brown mark (Fig. 13); tibiae and tarsi light brown, apices of tarsi brown; coxae usually with finger-like gills; tarsal claws with 6 denticles. Abdominal terga reddish brown with black and pale markings; terga 1–3 reddish brown with pale median macula, and darker reddish brown to black posterior margin; terga 4–9 pale with black transverse markings along anterior and posterior margins; tergum 10 usually pale (Fig. 18); abdominal terga 1–8 with a median tubercle; terga 1–7 with moderately developed tubercles; tubercle barely discernible on tergum 8 (Fig. 19); abdominal terga with sparse setae; abdominal gills pale; abdominal sterna light brown. (Caudal filaments broken).

*Holotype*, mature male nymph, RIO CLARRITA AT SAN MORANO ON HWY. 4, DEPT. EL PARAISO, HONDURAS, 29 October 1968, R. K. Allen. Paratypes: 1 male nymph, Stream 7 mi. N. Arriaga on Hwy. 190, Chiapas, Mexico, 20 July 1966, R. K. Allen; 1 female nymph, Stream 9 mi. S. Rio Grande de Santiago, Jalisco, Mexico, 17 October 1968, R. K. Allen, above paratypes in collection California State College at Los Angeles; 1 female nymph, Stream 10 mi. E. Guainaca on Hwy. 3, Dept. Fransico Morazan, Honduras, 6 November 1964, J. S. Packer; 1 female nymph, Stream 38 km E. Zamorano on Hwy. 4, Dept. El Paraiso, Honduras, 29 August 1964, J. S. Packer; 1 female nymph, Escuela Agricola Panamericana, El Paraiso, Honduras, 26 October 1964, J. S. Packer, above paratypes in collection University of Utah, Salt Lake City.

REMARKS.—This species has many characters in common with *Baetodes adustus* but is distinguished from it by size and color.

Mature nymphs of *B. pallidus* are small (3.5–4.5 mm in length), and the abdominal terga have distinctive reddish brown, black and pale markings.

### **Baetodes pictus** Cohen and Allen, new species

NYMPH.—Length: body 5.5–6.5 mm; caudal filaments 6.0–7.0 mm. General color brown with dark brown, yellow, and reddish brown markings. Head brown, frontoclypeal area pale; occiput with sparse setae. Thoracic nota brown with dark brown markings; pronotum with a posterior median elevation; metanotal tubercle small; thoracic nota with dense setae; thoracic sterna pale; coxae without gills; legs brown with pale markings; femora brown with large pale median marking (Fig. 14); tibiae and tarsi brown, tarsi brown at apices; tarsal claws with 6 denticles. Abdominal terga brown with reddish brown markings; terga 1–9 brown with broad reddish brown anterior transverse band, narrow reddish brown posterior transverse band, and reddish brown median macula; tergum 10 brown (Fig. 20); abdominal terga 1–7 with poorly developed median tubercle; tubercles barely discernible on terga 8–9 (Fig. 21); setae moderately dense; abdominal gills pale; abdominal sterna yellow with pale markings; sternum 1 pale; sterna 2–9 yellow with pale margins, posterior segments often with pale median longitudinal stripe; sternum 10 pale. Caudal filaments yellowish.

*Holotype*, nearly mature female nymph, STREAM 5 MI. S. CIUDAD MENDOZA, VERA CRUZ, Mexico, 7 November 1968, R. K. Allen.

REMARKS.—*Baetodes pictus* nymphs are superficially similar to those of *B. noventus* and *B. pallidus*. They are distinguished from *B. noventus* as the body tubercles are smaller in size, and the coxae are without gills. They are distinguished from *B. pallidus* as the middle abdominal terga bear a dark median macula, and the abdominal sterna are yellow.

### **Baetodes tritus** Cohen and Allen, new species

NYMPH.—Length: body 6.0–8.0 mm; caudal filaments 8.0–10.0 mm. General color light brown with brown and reddish brown markings. Head light brown with irregular brown markings; frontoclypeal area pale; occiput with setae. Thoracic nota light brown with brown and pale markings; pronotum without dorsal, median, posterior elevation or tubercle; mesonotum with moderately developed dorsal, median, posterior elevation; metanotum with well developed tubercle (Fig. 23); thoracic nota with setae; thoracic sterna pale to light brown; legs light brown with reddish brown markings; femora light brown with variable reddish brown markings; femora often with large subbasal reddish brown macula and submarginal reddish brown streak near dorsal margin (Fig. 15); tibiae and tarsi light brown and suffused with reddish brown; coxae without gills; claws with 7–8 marginal denticles. Abdominal terga light brown to brown with reddish brown markings; terga 1–9 each with reddish brown marking across anterior margin of segment; abdominal marking often absent on posterior

segments, and marking often disjunct in young specimens; abdominal terga 1-10 with a well developed median tubercle (Fig. 22-23); abdominal terga with setae; abdominal gills reddish with pale margins; abdominal sterna light brown with dark brown paired sublateral longitudinal streaks. Caudal filaments brown.

*Holotype*, male nymph, RIO TECOLAPAN NEAR SANTIAGO TUXTLA ON HWY. 180, VERA CRUZ, MEXICO, 16 July 1966, R. K. Allen. Paratypes: 17 male and 16 female nymphs, Rio San Marcos near Ciudad Victoria, Tamaulipas, Mexico, 24-25 November 1968, R. K. Allen, 1 male and 1 female nymph in each of the following collections: University of Utah, Salt Lake City; California Academy of Sciences; Canadian National Collection, Ottawa; V. K. Mayo, Tucson, Arizona; remainder in collection of California State College at Los Angeles. 1 male nymph, Stream at Santa Isabel, 12 mi. above Arriaga on Hwy. 190, Chiapas, Mexico, 23 October 1968, R. K. Allen; 4 female nymphs, Rio Latoma at km 182 on Hwy. 2, Guatemala, 24 October 1968, R. K. Allen; 2 female nymphs, Rio Amacuzac at Huajintlan on Hwy. 95, Morelos, Mexico, 14 November 1968, R. K. Allen; 1 male nymph, Stream at Hacienda Guadalupe, Jalisco, Mexico, 17 October 1968, R. K. Allen, 1 male and 1 female nymphs, Rio Sesecapa near Mapastepec on Hwy. 200, Chiapas, Mexico, 20 July 1966, R. K. Allen; 11 male and 14 female nymphs, Stream 9 mi. S. Rio Grande de Santiago, Jalisco, Mexico, 17 October 1968, R. K. Allen, above paratypes in collection California State College at Los Angeles; 1 female nymph, Stream 8 km El Paraiso, Honduras, 29 August 1964, J. S. Packer, in collection University of Utah, Salt Lake City.

REMARKS.—*Baetodes tritus* appears to be the most widely distributed Mexican *Baetodes* as it is known from central Mexico to Honduras. This species is also the most easily recognized as the abdominal terga bear well developed median tubercles on segments 1-10.

#### ACKNOWLEDGMENTS

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#### LITERATURE CITED

- DEMOULIN, G. 1955. Une Mission biologique Belge au Bresil Ephemeropteres. Bull. Inst. Roy Sci. Natur. Belg., 31: 1-32.  
EDMUNDS, G. F., JR. 1950. New records of the mayfly genus *Baetodes*, with notes on the genus. Entomol. News, 61: 203-205.

- MAYO, V. K. 1968. Two new species of the genus *Baetodes* from Ecuador. *Pan-Pac. Entomol.*, 44: 251-257.
- NEEDHAM, J. G. AND H. E. MURPHY. 1924. Neotropical mayflies. *Bull. Lloyd Libr.*, 24: 1-79.
- PACKER, J. S. 1966. A preliminary study of the mayflies of Honduras. *Ceiba*, 12: 1-10.
- TRAYER, J. R. 1943. New Venezuelan mayflies. *Bol. Entomol. Venez.*, 2: 79-98.
1944. Notes on Brazilian mayflies. *Bol. Mus. Nac. Rio de Janeiro, Zool.*, 22: 1-53.

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